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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,517	08/19/2002	Weiquan Liu	42390.P9659	2647

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EXAMINER	
WOZNIAK, JAMES S	

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/018,517	LIU ET AL.	
	Examiner	Art Unit	
	James S. Wozniak	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8,10-14 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8,10-14 and 16-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 August 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the office action from 6/5/2007, the applicant has submitted an amendment, filed 9/5/2007, amending the independent claims 1,7, and 13, while arguing to traverse the art rejection based on the limitation regarding selecting paragraphs based on a ranking, wherein paragraphs in the ranking that subsume the highest number of the paragraphs are selected prior to other paragraphs in the ranking *(Amendment, Pages 10-11)*. Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

2. In response to amended claim 7, the examiner notes that although the previous 35 U.S.C. 112, first paragraph rejection has been withdraw, such a claim amendment raises a 35 U.S.C. 101 issue in that the claimed computer readable medium is not limited to a tangible computer readable medium *(see below rejection and specification, page 9)*.

3. In response to the added step of outputting the summary, the examiner has withdrawn the previous 35 U.S.C. 101 rejection directed towards non-statutory subject matter.

Response to Arguments

4. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claims 1, 7, and 13**, the applicant argues that Salton et al *("Automatic Text Structuring and Summarization," 1997)* fails to teach:

a.) the concept of paragraph or node that subsumes another paragraph or node *(Amendment, Pages 10-11)*; and

b.) that paragraphs that subsume the largest numbers of other paragraphs will be chosen ahead of other paragraphs *(Amendment, Pages 10-11)*.

In support of such arguments the applicants point to Salton allegedly teaching that a summary is based on a path that is constructed of nodes containing the highest number of links to other nodes (i.e., "bushiness") *(Amendment, Page 11)*.

The applicant is correct in stating that Salton acquires paragraphs for summary based on a measure of "bushiness", however, the examiner notes that such a measure would teach the aforementioned claim limitations. Specifically, Salton discloses that links *(i.e., paths, connections)* between nodes or paragraphs are established and the paragraphs having the most overlapping vocabulary/concepts with other paragraphs are selected as a summary *(Section 3-3.1, Page 198)*.

Thus, in response to point a.) of the applicant's arguments, the examiner notes that Salton does teach the concept that a paragraph or node that a paragraph subsumes or incorporates another paragraph because Salton discloses that "bushiness" refers to a paragraph having terms

in common with another or "*discuss[es] topics covered in many other paragraphs*" *(Section 3-3.1, Page 198)*. In other words, higher-ranking paragraphs selected for summary incorporate or subsume the topics and terms of many other paragraphs. Thus, Salton discloses the aforementioned concept.

Thus, in response to point b.) of the applicants arguments, the examiner notes that Salton does teach that paragraphs that subsume the largest numbers of other paragraphs will be chosen ahead of other paragraphs because, as noted above, "bushiness" is a indicator of other paragraph topic/term coverage and Salton teaches that the "*most* bushy nodes...are arranged...to form the summary" *(Section 3-3.1, Page 198)*. In other words, Salton teaches that links between paragraphs are analyzed to determine an indicator of the number of topics a paragraph covers or the number of other paragraphs a node or paragraph under analysis subsumes, the "bushiest" nodes or paragraphs are selected as a chronological path through a document, and this sequence of paragraphs is utilized to form a summary. Thus, Salton discloses the aforementioned claim limitation.

The rejection of the remaining dependent claims is traversed for reasons similar to the independent claims *(Amendment, Pages 12-14)*. In regards to such arguments, see the response directed to the independent claims.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. **Claims 7-8, 10-12, and 20** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 7 is drawn to a "program" data structure *(distributed over a network, electrical, optical, acoustical, carrier, infrared, etc. signals, specification, page 9)* not limited to a tangible computer readable medium and as such is non-statutory subject matter. See MPEP § 2106.IV. Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed tangible computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. In this case, the scope of claim 7 is not limited to the recited tangible computer readable mediums disclosed on Page 9 of the specification (see magnetic or optical discs; see hardware-based readable media) since it includes the aforementioned non-tangible computer readable mediums, and as such is directed to non-statutory subject matter.

Dependent claims 8, 10-12, and 20 do not remedy the 35 U.S.C. 101 issue noted with respect to claim 7, and thus, are also rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 1 and 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton et al *("Automatic Text Structuring and Summarization," 1997)*.

With respect to **Claim 1**, McKeown discloses:

Parsing a plurality of paragraphs in a plurality of documents, each document with one or more of the paragraphs *(breaking a set of documents into paragraph text units, Page 454, System Architecture; and Fig. 2)*;

Selecting paragraphs from the documents through a subsuming relation calculation *(determining paragraph similarity based on matching terms and relationships for paragraph selection in theme determination, Page 454, Identifying themes)*, wherein the subsuming relation calculation includes:

Linking noun phrases, verb phrases or entity names in each paragraph of every document with identical noun phrases, verb phrases or entity names in every other paragraph of every document *(word co-occurrence and noun phrase matching used in a similarity calculation, Pages 455-456, Document Analysis)*; and

Counting the links for each paragraph *(determining the amount of matching terms for each paragraph unit, Page 455, System Architecture; and Page 456, Document Analysis)*, denoting the number of links as the significant score of that paragraph *(measuring paragraph pairwise similarity based upon matching term occurrence frequency, Page 456, Document Analysis)*.

Although McKeown discloses a method for multi-document summarization utilizing links between paragraphs and a count based upon linking term occurrence frequency within the paragraphs, McKeown does not specifically teach counting created links for paragraph selection and aggregation for creating a summary. Such summary formation techniques are well known in the text processing art, however, as is evidenced by the Salton reference. Salton discloses counting and recording the term links in a paragraph node to other paragraphs, selecting the top-ranking targeted number of paragraphs based on the number of links or number of topics that a paragraph incorporates from other paragraphs, and extracting the top ranking paragraphs to create a summary *(Sections 3-3.1, Page 198)*.

McKeown and Salton are analogous art because they are from a similar field of endeavor in text summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown with the text summarization technique taught by Salton in order to provide a means for creating a comprehensive summary having good coverage of a particular subject matter *(Salton, Section 3.1, Page 198)*.

With respect to **Claim 5**, McKeown further discloses:

The documents have a common topic independent of domain *(summarizing multiple documents in any domain, Page 459, Conclusions and Future Work)*.

With respect to **Claim 6**, McKeown further recites the summarization of English documents *(see Fig. 2)*.

9. **Claims 2 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton et al in view of McKeown et al *(U.S. Patent: 6,473,730)* and further in view of Ueda *(U.S. Patent: 6,493,663)*.

With respect to **Claim 2**, McKeown in view of Salton discloses the multiple document summarization method and system featuring noun phrase extraction as applied to Claim 1. McKeown in view of Salton does not specifically suggest a means for categorizing noun phrases that are entity names and converting the entity names into canonical form, however McKeown *(U.S. Patent: 6,473,730)* recites:

Categorizing the noun phrases that are entity names *(identified proper noun phrases relating to an entity, Col. 3, Line 62- Col. 4, Line 15; and Col. 5, Line 41-57)*; and

Converting the entity names into canonical form *(Col. 5, Lines 7-20)*.

McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)*, Salton, and McKeown *(U.S. Patent: 6,473,730)* are analogous art because they are from a similar field of endeavor in document summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton with the parsing algorithms taught by McKeown *(U.S.*

Patent: 6,473,730) in order to implement a further means for identifying significant topical segments *(McKeown, Col. 2, Lines 35-37)*.

McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)*, Salton, and McKeown *(U.S. Patent: 6,473,730)* do not specifically suggest the extraction of verb phrases, however Ueda discloses the extraction of such phrases *(Col. 20, Line 65- Col. 21, Line 4)*.

McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)*, Salton, McKeown *(U.S. Patent: 6,473,730)*, and Ueda are analogous art because they are from a similar field of endeavor in document summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton and further in view of McKeown *(U.S. Patent: 6,473,730)* with the verb phrase extraction taught by Ueda in order to include additional well-known phrase types so that a user can select an appropriate summarization style *(Ueda, Col. 21, Lines 1-4)*.

With respect to **Claim 19**, McKeown in view of Salton discloses the multiple document summarization method and system featuring noun phrase matching as applied to Claim 1, McKeown '730 discloses the entity name processing as applied to Claim 2, and Ueda discloses the verb phrase processing as applied to Claim 2. Also, Salton further recites the concept of determining shared terms between paragraphs to identify topics that are subsumed by a possible summary paragraph, as applied to Claim 1.

10. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton et al and further in view of McKeown et al *(U.S. Patent: 6,473,730)*.

With respect to **Claim 4**, McKeown in view of Salton discloses the multiple document summarization method and system as applied to Claim 1. McKeown in view of Salton does not specifically suggest a means for applying a co-reference resolution algorithm and replacing pronouns with full entity name antecedents, however McKeown *(U.S. Patent: 6,473,730)* recites:

Applying a co-reference resolution algorithm to the paragraphs *(linking noun phrases to a head noun phrase- see "red wine" example, Col. 5, Lines 7-20)*; and

Replacing pronouns in the paragraphs with their full entity name antecedents *(merging pronouns and proper noun phrase processing, Col. 5, Lines 7-57)*.

McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)*, Salton, and McKeown *(U.S. Patent: 6,473,730)* are analogous art because they are from a similar field of endeavor in document summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton with the rewriting algorithms taught by McKeown *(U.S. Patent: 6,473,730)* in order to implement a further means for identifying significant topical segments *(McKeown, Col. 2, Lines 35-37)*.

11. **Claims 7, 11-13, and 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton et al and further in view of Ueda *(U.S. Patent: 6,493,663)*.

With respect to **Claims 7 and 13**, McKeown in view of Salton discloses the multiple document summarization method and system as applied to Claim 1. McKeown in view of Salton does not specifically suggest method implementation as a program stored on a computer readable medium or associated processing elements, however Ueda discloses summarizing method implementation as a program stored on a computer readable medium *(Col. 3, Lines 20-24)*. Ueda also recites method implementation using a computer processor that would inherently require a bus for communicating with the disclosed computer memory medium to achieve document summarization processing *(Col. 23, Lines 29-44)*.

McKeown, Salton, and Ueda are analogous art because they are from a similar field of endeavor in document summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown in view of Salton with the computer program implementations taught by Ueda in order to provide a means for easily implementing a document summarization method on any type of computer *(Ueda, Col. 3, Lines 20-24)*.

With respect to **Claims 11 and 17**, McKeown discloses:

The documents have a common topic independent of domain *(summarizing multiple documents in any domain, Page 459, Conclusions and Future Work)*.

With respect to **Claims 12 and 18**, McKeown recites the summarization of English documents *(see Fig. 2)*.

12. **Claims 8, 10, 14, 16, and 20-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over McKeown et al *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton in view of Ueda *(U.S. Patent: 6,493,663)* and further in view of McKeown et al *(U.S. Patent: 6,473,730)*.

With respect to **Claims 8 and 14**, McKeown in view of Salton and further in view of Ueda discloses the multiple document summarization method and system featuring noun phrase extraction as applied to Claims 7 and 13. Ueda also discloses the extraction of verb phrases *(Col. 20, Line 65- Col. 21, Line 4)*. McKeown in view of Salton and further in view of Ueda does not specifically suggest a means for categorizing noun phrases that are entity names and converting the entity names into canonical form, however McKeown *(U.S. Patent: 6,473,730)* recites:

Categorizing the noun phrases that are entity names *(identified proper noun phrases relating to an entity, Col. 3, Line 62- Col. 4, Line 15; and Col. 5, Line 41-57)*; and

Converting the entity names into canonical form *(Col. 5, Lines 7-20)*.

McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)*, Salton, Ueda, and McKeown *(U.S. Patent: 6,473,730)* are analogous art because they are from a similar field of endeavor in document summarization. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of McKeown *("Towards Multidocument Summarization by Reformulation: Progress and Prospects," 1999)* in view of Salton and further in view of Ueda with the parsing algorithms

taught by McKeown *(U.S. Patent: 6,473,730)* in order to implement a further means for identifying significant topical segments *(McKeown, Col. 2, Lines 35-37)*.

With respect to **Claims 10 and 16**, McKeown *(U.S. Patent: 6,473,730)* further discloses:

Applying a co-reference resolution algorithm to the paragraphs *(linking noun phrases to a head noun phrase- see "red wine" example, Col. 5, Lines 7-20)*; and

Replacing pronouns in the paragraphs with their full entity name antecedents *(merging pronouns and proper noun phrase processing, Col. 5, Lines 7-57)*.

Claims 20-21 contain subject matter similar to claim 19, and thus, are rejected under similar rationale.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
10/25/2007

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